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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,626	07/19/2006	Kaoru Hoshino	293615US0PCT	6116

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EXAMINER	
ROE, JESSEE RANDALL	
ART UNIT	**PAPER NUMBER**
1793	

NOTIFICATION DATE	DELIVERY MODE
03/03/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/586,626	HOSHINO ET AL.	
	Examiner	Art Unit	
	Jessee Roe	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *24 September 2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

Claims 1 and 3-17 are pending wherein claims 1 and 3 are amended, claim 2 is canceled and claims 5-17 are new.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 3-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to the recitation “in a heating furnace to form HCN under catalytic action of at least one of said metal member, a metal-made inner wall of said furnace and a metal-made jig in the thus-heated mixed gas”, the preamble recites “A method for activating a surface of a metal member”. However, the amended “at least one of” recitation provides scenarios that would exclude the metal member. Therefore, it is unclear whether the metal member is required by the claim.

Examiner Interpretation

In view of the indefiniteness as stated above, the Examiner has interpreted the scope of the claims to include only one of a metal member, a metal-made inner wall of a furnace and a metal-made jig.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4-7, 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota (US 5,702,540).

In regards to claims 1 and 6-7, Kubota ('540) discloses heating steel materials in a gas mixture comprising acetylene or ethylene and ammonia in a vacuum furnace at temperatures on the order of 850°C to 900°C in order to quench at a lower temperature and decrease distortion (col. 3, lines 28-45, col. 6, lines 23-31 and Process 5). Although Kubota (‘540) does not provide a single embodiment combining these features such would have been obvious to one of ordinary skill in the art provided the broad disclosure of Kubota (‘540).

With respect to the recitations “to form HCN under catalytic action” and “causing the thus-formed HCN to act on said surface of said metal member”, although Kubota ('540) is silent with respect to the formation of HCN, the Examiner asserts that this compound would form and act on the surface of the metal member because Kubota ('540) discloses the same reactants and the same temperature conditions. MPEP 2112.01 I.

With respect to the recitation "for activating a surface of a metal member" as in line 1 of claim 1, because Kubota ('540) discloses the same steps as the instant invention it would be expected that the surface of the steel work piece disclosed by Kubota would also be activated

With respect to the recitation "wherein HCN is formed to at least 100 mg/m^3 in said heating furnace and a furnace atmosphere gas has a dew point not higher than 5°C" of claim 4, the Examiner asserts that this would be expected because Kubota ('540) discloses the same reactants and the same temperature conditions. MPEP 2112.01 I.

With respect to the recitations "wherein said HCN is formed under catalytic action of said metal member" of claim 7 and "wherein said HCN is formed in said heating furnace in a concentration of from 100 to 30,000 mg/m^3" of claim 12, the Examiner notes that Kubota ('540) discloses applying the same gases to the same metal member. Therefore, HCN formed under catalytic action of the steel member and HCN formed at a concentration of from 100 to 30,000 mg/m^3 would be expected. MPEP 2112.01 I.

Claims 3, 8 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota (US 5,702,540) as applied to claim 1 above, and further in view of Hall et al. (US 2,404,060).

In regards to claims 3 and 13, Kubota ('540) discloses heating steel materials in a gas mixture comprising acetylene or ethylene and ammonia in a vacuum furnace as

described above, but Kubota ('540) does not specify the composition of the inner wall of the furnace.

Hall et al. (‘060) discloses forming the inner baffle of a chamber that would be used as a vacuum furnace out of molybdenum in order to conserve the heat developed by the resistance element (col. 2, line 50 - col. 3, line 2 and col. 3, line 69 - col. 4, line 26).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of heating steel materials in a gas mixture comprising acetylene or ethylene and ammonia in a vacuum furnace, as disclosed by Kubota (‘540), by forming the inner baffle of a chamber that would be used as a vacuum furnace out of molybdenum, as disclosed by Hall et al. (‘060), in order to conserve the heat developed by the resistance element, as disclosed by Hall et al. (‘060) (col. 2, line 50 - col. 3, line 2 and col. 3, line 69 - col. 4, line 26).

With respect to the recitation "wherein said HCN is formed under catalytic action of said metal-made inner wall of said furnace" of claim 8 and “wherein said inner wall of said furnace is made of metal and wherein said HCN is also formed under catalytic action of said wall of said furnace” of claim 14, the Examiner asserts that this would be expected in Kubota (‘540) in view of Hall et al. (‘060) because Kubota (‘540) in view of Hall et al. (‘060) discloses the same metals and gases present in addition to the same temperature conditions. MPEP 2112.01 I.

Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota (US 5,702,540) as applied to claims 1 and 7 above, and further in view of

Hemmer et al. (US 3,281,517).

In regards to claims 10-11, Kubota (‘540) discloses heating steel materials in a gas mixture comprising acetylene or ethylene and ammonia in a vacuum furnace as described above, but Kubota ('540) does not specify the composition of the inner wall of the furnace.

Hemmer et al. (‘517) discloses fabricating the inner wall (liner) of a vacuum furnace with a refractory material such as boron nitride in order to generate maximum heat and prevent flow of current through the charge (col. 3, lines 28-75).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a boron nitride inner wall, as disclosed by Hemmer et al. ('517) in the vacuum furnace, as disclosed by Kubota ('540), in order to generate maximum heat and prevent flow of current through the charge, as disclosed by Kubota (‘540) (col. 3, lines 28-75).

Response to Arguments

Applicant's arguments with respect to claims 1 and 3-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571)272-5938. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

JR